

Home Course In Modern Agriculture

VI.—How Plants Are Propagated

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In order to continue to raise crops from year to year we must propagate the plants in some way.

There are two principal ways of doing this—by seeds and by divisions of the plant itself. The most important of these is by seeds, as it is in this way that most of the ordinary farm crops are multiplied.

In order to understand this process we must first learn how the seeds are formed. The tassel of the corn is the male flower and the silk the female. Some plants, such as certain varieties of strawberries, have only female flowers and must be planted in alternate rows with varieties which have both kinds of blossoms. In other plants the male and female flowers are combined in one. This is the case with the apple and many other fruits. In the apple the stamens, or male parts, grow in a ring around the pistil, or female part, which is in the center of the flower. The top of a stamen, which is expanded, is called the anther. This contains a yellow dust, the pollen.

The upper portion of the pistil is called the stigma. From it a tube called the style leads downward to the ovary. This ovary contains one or more egg shaped cells called ovules. Each of these ovules is capable of developing into a seed if fertilized with a pollen grain. When a grain of pollen alights on a ripe stigma it is held by a sticky substance secreted there. It soon germinates and sends a long, threadlike projection down through the style to the ovary. This slender projection enters the ovary, and the resultant union of the male and female elements causes a seed to develop. One pollen grain is required for each ovule, and each ovule develops into a separate seed. There are many thousand pollen grains produced by each stamen, and as there are several stamens for each pistil you will see that a great excess of pollen is produced. This is one of nature's methods of making reproduction more certain.

In flowers like the apple the pollen may sometimes fall directly on the stigma in the same flower. More often, however, the stamens and pistils ripen at different times. The object of this is to prevent self fertilization, which, if long continued, will weaken the vitality of the coming generations. Cross pollination—that is, the fertilization of the ovule of one flower by the pollen from another plant—unites the strength of both parents and produces larger, harder seed.

This has been proved by many experiments. If the tassels are pulled from a row of corn before they have time to shed their pollen, the silks must necessarily be fertilized by pollen from other stalks. The cross pollination will cause the detasseled rows to produce heavier and larger ears. If this process is continued from year to year the yielding power of that particular strain will be considerably increased.

In such plants as corn the wind carries the pollen for rods in every direction. The air in the cornfield is so filled with the yellow dust that there is seldom any danger that the silks will fail to catch more than plenty to fertilize each of the many ovules that are to form the future kernels.

Some plants, however, are not so fortunate in this respect. The pollen of fruit trees is carried to some extent by the wind, but not nearly so much so as that of corn. In such plants as

clover the stamens are at the bottom of a slender tube, from which they cannot escape unaided. Plants of this nature are dependent on insects to transfer pollen from one flower to another. In order to attract these insects the flowers secrete a sweet nectar, which collects in the bottom of the tubes of which the flowers are composed.

Ants, flies, butterflies and bees are very fond of this nectar and in collecting it carry the pollen of one flower to the stigma of another. Bees are most important in doing this work because they gather so much more of the nectar than do the other insects. They often carry home some of the pollen,

too, which can be seen sticking in yellow balls to their hind legs, but enough is always brushed off to fertilize the flowers which they visit. The blossoms of red clover are so large that the short tongues of ordinary honeybees cannot reach to the bottom. It is upon the larger bumblebees that this crop depends for its ability to produce seed.

Indeed, it is so entirely dependent upon them that the crop of clover seed is in direct proportion to the number of bumblebees in the neighborhood. It is anything but pleasant to run into a big nest of bumblebees with a mower or rake, but before you build a fire over them stop to think whether you want a crop of clover seed or not.

Some beekeepers are developing strains of honeybees with exceptionally long tongues. Some of these are able to obtain honey from second crop red clover, which has smaller blossoms than the first crop. When these strains of bees become a little better developed and more widely distributed the usefulness of the bumblebee will be over.

In the case of small grain cross fertilization is impossible, since the flower is inside of a closed hull. Two varieties of wheat may be planted in adjoining fields or even in the same field without the slightest danger of mixing. Varieties of corn, on the other hand, often mix when as much as forty rods apart.

The selection of seed corn will be taken up in the next article. The best

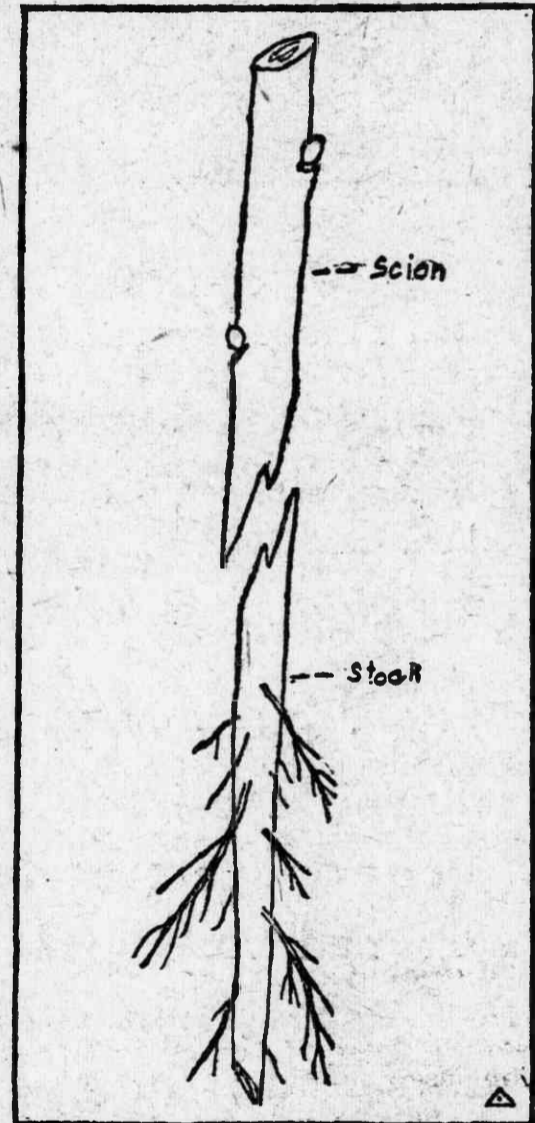


FIG. XIII—THE STOCK AND SCION READY TO BE UNITED.

method of selecting small grain is by means of the fanning mill. By running through three or four times as much seed as is needed all the small grains may be sieved out and the light ones blown over, leaving only the heaviest, strongest ones for planting.

Grain that is intended for seed should be stored carefully in order that it may go through the winter uninjured. The chief enemies of stored seed are moisture, insects and rats and mice. The seed should be dry when stored and kept where moisture cannot gain access to it. Dry seed will stand almost any amount of freezing without injury.

There are a number of insects that damage seed grain by burrowing into the germ. If the seed room is tight, they may be killed by fumigating with carbon disulphide used at the rate of a pound to each thousand cubic feet of space. Place this in an open dish on top of the seed, close the room as tightly as possible, and in a few hours the insects will be exterminated. Care should be taken not to go near the room with a light, as the gas is explosive. This same treatment is also fatal to rats and mice, unless they have some way of escaping from the room. If possible the seed room should be so well built that these pests cannot get into it.

The second method of plant propagation is by division—that is, by planting parts of the plant itself. Potatoes are propagated in this way almost entirely. If small willow and poplar branches are stuck into the ground, they will grow into trees. Apple and other fruit trees are propagated either by grafting or budding. Apple trees may be raised from seed, but the fruit of seedling trees is usually worthless. By taking a part of the tree and

growing another from it, it will, of course, bear the same kind of fruit.

Grafting consists of joining pieces of small branches or scions of the tree which is to be propagated to pieces of roots or stocks. The roots of yearling seedlings are used for stocks. The scions, which should be about the size of a lead pencil, should be cut in the fall and packed in sand. The grafting can be done at any time during the winter. All that is necessary is to cut the lower end of the scion and the upper end of the stock at an angle, as shown in Fig. 13. These are then carefully fitted together and tied with a little common string. The essential point is to be sure to have the cambium layer of the scion join that of the stock. This cambium layer is the thin, light brown portion between the bark and the wood. It is the point where growth takes place.

The completed graft, which should be eight to ten inches long, is again packed in sand. In the spring the grafts are planted in a row in the garden and left until they are two or three years old, when they may be transplanted to their permanent place in the orchard.

GREAT CHURCH CONVENTION.

Twenty-five Millions Represented at Presbyterian Alliance Meeting.

New York—One of the most important religious gatherings of recent years in the number of persons represented is that of the world's Presbyterian alliance, which has begun in this city. In it are represented five continents, ninety separate denominations and nearly 25,000,000 members. The meeting is known officially as the ninth quinquennial council of the Alliance of the Reformed Churches Throughout the World Holding the Presbyterian System. To facilitate matters the Alliance is generally referred to as the Pan-Presbyterian Alliance.

The meeting will last ten days, during which subjects of great moment to the Protestant world will be discussed.

England, Scotland, France, Italy, Arabia, Canada and other countries have sent delegates to the convention, as well as the United States.

A Carload of Alligators.

New Orleans—What is said to be the largest consignment of alligators ever shipped over a railroad left New Orleans for Los Angeles. There was a full carload of the reptiles, comfortably ensconced in large vessels, partially filled with water.

Bishop Hendrix Made President.

Nashville, Tenn.—At a meeting here Bishop E. R. Hendrix, of the Methodist Episcopal church, south, was elected president of the Vanderbilt university board of trustees.

Trouble Makers Ousted.

When a sufferer from stomach trouble takes Dr. King's New Life Pills he's mighty glad to see his dyspepsia and indigestion fly, but more he's tickled over his new, fine appetite, strong nerves, healthy vigor, all because stomach, liver and kidneys now work right. 25c at Allison & Macfie.

Dividends of L. & N.

New York.—The directors of the Louisville and Nashville railroad have declared a semi-annual dividend of 3 per cent. on the stock of the company. The two preceding semi-annual dividends had been at the rate of 2½ per cent.

Coast Line Pays Dividend.

New York.—A semi-annual dividend of 3 per cent. on the common stock has been declared by the directors of the Atlantic Coast Line Railroad Company. This is an increase of 1 per cent. on the last previous semi-annual dividend.

Deafness Cannot be Cured

by local applications, as they cannot reach the diseased portion of the ear. There is only one way to cure deafness, and that is by constitutional remedies. Deafness is caused by an inflamed condition of the mucous lining of the Eustachian Tube. When this tube is inflamed you have a rumbling sound or imperfect hearing, and when it is entirely closed, Deafness is the result, and unless the inflammation can be taken out and this tube restored to its normal condition, hearing will be destroyed forever. Nine cases out of ten are caused by Catarrh, which is nothing but an inflamed condition of the mucous surfaces.

We will give One Hundred Dollars for any case of Deafness (caused by catarrh) that cannot be cured by Hall's Catarrh Cure. Send for circulars, free. F. J. CHENEY & Co., Toledo, O. Sold by Druggists, 75c. Take Hall's Family Pills for constipation.

PILES - FISTULA POSITIVELY NO MONEY

Until you are perfectly well is the guarantee which any of these prominent men will tell you is as good as a gold bond.

Washington Candy Man Cured of His Mind Affected by Suffering from Piles, Fistula and Fissure—Restored to Health.

Jefferson, S. C., Jan. 28, 1905.

Drs. Thornton & Minor:

Gentlemen—I am always willing to help any one in the fix I was with Piles, Fistula and Fissure. I can say to all who might be in the same fix, go right to their office and be cured, for I had that troublesome disease for about twenty years. I got so that I could not do my own work and it seemed that my mind was affected at times. When I would go to stool the blood would come out in a stream about the size of a knitting needle. I lost so much blood that sometimes I would almost as soon have been dead as living. I saw an advertisement in the Commercial Appeal, which is printed in Memphis, Tenn. I wrote to them and they answered me at once and I corresponded with them about a year before I went. The only thing I hate is that I did not go sooner. They wrote me that they had a branch office in St. Louis, Mo., and could cure me there as well as in Kansas City, Mo. I wrote them that I would start on the 19th of September and for them to meet me at St. Louis, Mo. So I started on the 19th of September and I arrived at St. Louis, Mo., on the 22d of September. About an hour after I got there Dr. Minor met me and the doctors examined me and told me that my case was a serious one, but they could cure me. I have had more pain in one action of the bowels before I went there, than I had from their treatment. I took treatment for a little over three weeks and they said I could go home. I was walking about all the time I was being treated. I ate just anything I wanted. I could not ask anybody to be more kind to me than they were while I was with them. When I came home I weighed one hundred and forty pounds; when writing this testimonial I weighed one hundred and sixty-one pounds, and feel like I am twenty-five years younger than I did when I left home to be treated. Yours respectfully,

H. H. CASSIDY, 1007 G St., S. W., Manufacturer of Candies. Telephone Main 3630.

Suffered From Fistula—No Symptoms of a Return of the Disease After 18 Years.

Washington, D. C., April 22, 1904.

Drs. Thornton & Minor: Gentlemen—I had suffered about three years with Fistula, when friends who had been successfully treated by you advised me to go to you for treatment. I am happy to state that your treatment of my case was successful and in every way satisfactory, and now, after a lapse of eighteen years, there have been no symptoms of a return of the disease. I shall be grateful to the friends who advised me to go to you for treatment, and can conscientiously recommend your method as a safe, scientific and satisfactory one. Very truly your friend,

W. N. IRWIN, U. S. Dept. of Agriculture.

Suffered with Piles and Contraction for Twenty Years.

Staley, N. C., April 16, 1907.

Drs. Thornton & Minor: Gentlemen—I suffered with piles and contraction for about twenty years, and during that time tried almost every remedy that was recommended, but the piles gradually grew worse. The fall of 1905 I went to your office in St. Louis, Mo., for treatment, and in three weeks I left for home a well man. One cannot make a mistake in placing their case in the hands of Drs. Thornton & Minor, as they are gentlemen of the highest type and physicians of the greatest honesty and skill, and will guarantee a cure or no pay, and you don't have to pay till you are cured.

J. W. COX, General Merchant. Editor Sylvan Valley News.

I take pleasure in endorsing all that others say regarding the Thornton & Minor treatment. After 15 years of suffering from piles and ulceration I feel that four weeks at their sanitarium has cured me. Enquiries will be cheerfully answered.

J. J. MINER, Editor Sylvan Valley News.

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The Thornton & Minor Sanitarium
Wm. E. Minor, M. D., Physician in charge
OFFICES: 1004 OAK STREET
Kansas City, Mo.

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